WHAT IS CLAIMED IS:

1. An isolated sweet taste receptor comprising a T1R3 polypeptide, wherein the T1R3 polypeptide is encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:15, 20, 23, or 25.

2. The isolated receptor of claim 1, wherein the T1R3 polypeptide is encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:15, 20, 23, or 25.

3. The isolated receptor of claim 1, wherein the T1R3 polypeptide has an amino acid sequence of SEQ ID NO:15, 20, 23, or 25.

4. The isolated receptor of claim 1, wherein the receptor comprises a T1R3 polypeptide and a heterologous polypeptide.

5. The isolated receptor of claim 4, wherein the T1R3 polypeptide and the heterologous polypeptide are non-covalently linked.

6. The isolated receptor of claim 4, wherein the T1R3 polypeptide and the heterologous polypeptide are covalently linked.

7. The isolated receptor of claim 4, wherein the heterologous polypeptide is a T1R1 polypeptide that is encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:1, 2, or 3.

8. The isolated receptor of claim 4, wherein the heterologous polypeptide is a T1R1 polypeptide that is encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:1, 2, or 3.

9. The isolated receptor of claim 7, wherein the T1R1 polypeptide has an amino acid sequence of SEQ ID NO:1, 2, or 3.

10. The isolated receptor of claim 4, wherein the heterologous polypeptide is a T1R2 polypeptide that is encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:7, 8, or 9.

11. The isolated receptor of claim 4, wherein the heterologous polypeptide is a T1R2 polypeptide is encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:7, 8, or 9.

12. The isolated receptor of claim 10, wherein the T1R2 polypeptide has an amino acid sequence of SEQ ID NO:7, 8, or 9.

13. The isolated receptor of claim 1, wherein the receptor has G protein coupled receptor activity.

14. The isolated receptor of claim 1, wherein the receptor specifically binds to antibodies raised against SEQ ID NO: 15, 20, 23, or 25.

15. An isolated sweet taste receptor comprising a T1R3 polypeptide and a T1R1 polypeptide, wherein the T1R3 polypeptide is encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:15, 20, 23, or 25; and wherein the T1R1 polypeptide that is encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:1, 2, or 3.

16. An isolated sweet taste receptor comprising a T1R3 polypeptide and a T1R2 polypeptide, wherein the T1R3 polypeptide is encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:15, 20, 23, or 25; and wherein the T1R2 polypeptide that is encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:7, 8, or 9.

17. An antibody that specifically binds to the taste receptor claim 1.

18. The antibody of claim 17, wherein the antibody specifically binds to a taste receptor comprising T1R1 and T1R3.

19. The antibody of claim 18, wherein the T1R1 polypeptide and the T1R3 polypeptide are non-covalently linked.

20. The antibody of claim 18, wherein the T1R1 polypeptide and the T1R3 polypeptide are covalently linked.

21. The antibody of claim 17, wherein the antibody specifically binds to a taste receptor comprising T1R2 and T1R3.

22. The antibody of claim 21, wherein the T1R2 polypeptide and the T1R3 polypeptide are non-covalently linked.

23. The antibody of claim 21, wherein the T1R2 polypeptide and the T1R3 polypeptide are covalently linked.

24. A method of identifying a compound that modulates sweet taste signal transduction in taste cells, the method comprising the steps of

(i) contacting the compound with a sweet taste receptor comprising a T1R3 polypeptide, wherein the T1R3 polypeptide is encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:15, 20, 23, or 25; and

(ii) determining the functional effect of the compound upon the receptor, thereby identifying a compound that modulates sweet signal transduction.

25. The method of claim 24, wherein the T1R3 polypeptide is encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:15, 20, 23, or 25

26. The method of claim 24, wherein the receptor comprises a T1R3 polypeptide and a heterologous polypeptide.

27. The method of claim 25, wherein the T1R3 polypeptide and the heterologous polypeptide are non-covalently linked.

28. The method of claim 25, wherein the heterologous polypeptide is a T1R1 polypeptide encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:1, 2, or 3.

29. The method of claim 25, wherein the heterologous polypeptide is a T1R1 polypeptide encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:1, 2, or 3.

30. The method of claim 25, wherein the T1R1 polypeptide has an amino acid sequence of SEQ ID NO:1, 2, or 3.

31. The method of claim 25, wherein the heterologous polypeptide is a T1R2 polypeptide encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:7, 8, or 9.

32. The method of claim 25, wherein the heterologous polypeptide is a T1R2 polypeptide encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:7, 8, or 9.

33. The method of claim 25, wherein the T1R2 polypeptide has an amino acid sequence of SEQ ID NO:6, 7, or 8.

34. The method of claim 24, wherein the receptor is recombinant.

35. The method of claim 24, wherein the receptor has G protein coupled receptor activity.

36. The method of claim 24, wherein the functional effect is measured *in vitro*.

37. The method of claim 36, wherein the functional effect is a physical effect.

38. The method of claim 36, wherein the receptor is linked to a solid phase.

39. The method of claim 36, wherein the functional effect is determined by measuring binding of a compound to the receptor.

40. The method of claim 39, wherein the functional effect is determined by measuring binding of a compound to the extracellular domain of the receptor.

41. The method of claim 24, wherein the receptor is expressed in a cell or cell membrane.

42. The method of claim 41, wherein the functional effect is a physical effect.

43. The method of claim 42, wherein the functional effect is determined by measuring ligand binding to the receptor.

44. The method of claim 43, wherein the functional effect is determined by measuring binding of a compound to the extracellular domain of the receptor.

45. The method of claim 41, wherein the functional effect is a chemical or phenotypic effect.

46. The method of claim 45, wherein the functional effect is determined by measuring changes in intracellular cAMP, IP3, or Ca^{2+}.

47. The method of claim 41, wherein the cell is a mammalian cell.

48. The method of claim 47, wherein the cell is a human cell.

49. A method of identifying a compound that modulates sweet taste signal transduction in taste cells, the method comprising the steps of

(i) contacting the compound with cell expressing a sweet taste receptor comprising a T1R3 polypeptide and a T1R2 polypeptide, wherein the T1R3 polypeptide is encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:15, 20, 23, or 25; and wherein the T1R2 polypeptide that is encoded by a nucleotide sequence that

hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:7, 8, or 9; and

(ii) determining the functional effect of the compound upon the receptor, thereby identifying a compound that modulates sweet signal transduction.

50. The method of claim 49, wherein the T1R2 polypeptide and the T1R3 polypeptide are non-covalently linked.

51. The method of claim 49, wherein the T1R2 polypeptide and the T1R3 polypeptide are covalently linked.

52. A method of identifying a compound that modulates sweet taste signal transduction in taste cells, the method comprising the steps of

(i) contacting the compound with cell expressing a sweet taste receptor comprising a T1R3 polypeptide and a T1R1 polypeptide, wherein the T1R3 polypeptide is encoded by a nucleotide sequence that hybridizes under highly stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:15, 20, 23, or 25; and wherein the T1R1 polypeptide that is encoded by a nucleotide sequence that hybridizes under moderately stringent hybridization conditions to a nucleotide sequence encoding an amino acid sequence of SEQ ID NO:1, 2, or 3; and

(ii) determining the functional effect of the compound upon the receptor, thereby identifying a compound that modulates sweet signal transduction.

53. The method of claim 52, wherein the T1R1 polypeptide and the T1R3 polypeptide are non-covalently linked.

54. The method of claim 52, wherein the T1R1 polypeptide and the T1R3 polypeptide are covalently linked.